

Attorney Docket No: IMMR-063/00US

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Juan Manuel CRUZ-HERNANDEZ *et al.* Examiner: Unassigned

Serial No. 10/792,279

Art Unit: 2675

Confirmation No.: 4217

Filed: March 4, 2004

For: **HAPTIC DEVICES HAVING MULTIPLE OPERATIONAL MODES  
INCLUDING AT LEAST ONE RESONANT MODE**

U.S. Patent and Trademark Office  
 220 20<sup>th</sup> Street South  
 Customer Window, Mail Stop Missing Parts  
 Crystal Plaza Two, Lobby, Room 1B03  
 Arlington, VA 22202

## INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- In accordance with 37 C.F.R. §1.97(c), also enclosed is:
  - the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
  - a statement as specified in 37 C.F.R. §1.97(e).
- In accordance with 37 C.F.R. §1.97(d), a statement as specified in 37 C.F.R. § 1.97(e) and the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p) are also enclosed.
- Check No. \_\_\_ in the amount of \$\_\_\_ for the total fee is attached.
- A return receipt postcard is also enclosed.
- Please charge \$\_\_\_ to Deposit Account No. 50-1283 for the total fee. This paper is being submitted in duplicate.



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Application Serial No. 10/792,279  
Page 2

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

Dated: September 14, 2004

Cooley Godward LLP  
ATTN: Patent Group  
One Freedom Square  
Reston Town Center  
11951 Freedom Drive  
Reston, VA 20190-5656  
Tel: (703) 456-8000  
Fax: (703) 456-8100

By:

Respectfully submitted,  
**COOLEY GODWARD LLP**

  
\_\_\_\_\_  
Erik B. Milch  
Reg. No. 42,887

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4NFR01!.DOC

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



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**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56,  
Applicant(s) hereby submits the following information in conformance with 37 C.F.R.  
§§1.97 and 1.98.

- Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08A is provided on the enclosed CD.
- No copies of the publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial No. 10/301,809, filed on November 22, 2002 to which the above-identified application claims priority under 35 U.S.C. §120.
- No copies of any U.S. patents or U.S. patent application publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98 because this application was filed after June 30, 2003.
- Publication(s) \_\_\_\_\_ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to \_\_\_\_\_ application serial no. \_\_\_\_\_ and mailed on \_\_\_\_\_.
- Enclosed is a copy of a non-English publication(s) \_\_\_\_\_. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).
- Enclosed is a copy of a non-English publication(s) \_\_\_\_\_. English language publication \_\_\_\_\_ (copy enclosed) claims priority from this non-English publication.

- Enclosed is an explanation of non-English publication(s) \_\_\_\_ for which an English translation is not available.
- Enclosed is an English translation of non-English publication(s) \_\_\_\_ cited in the attached Form PTO/SB/08A.
- Enclosed is a copy of pending patent Application Serial No. \_\_\_\_.

This Information Disclosure Statement is filed within any one of the following time periods:

- within three months from the filing date of this national application other than a CPA under 37 C.F.R. § 1.53(d);
- within three months from the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in this international application;
- before the mailing date of a first office action on the merits; or
- before the mailing of a first office action after the filing of a request for continued examination under 37 C.F.R. § 1.114.

It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

Dated: September 14, 2004

Cooley Godward LLP  
One Freedom Square  
Reston Town Center  
11951 Freedom Drive  
Reston, Virginia 20190-5656  
(703) 456-8000  
(703) 456-8100

Respectfully submitted,  
COOLEY GODWARD LLP

By:

  
\_\_\_\_\_  
Erik B. Milch  
Reg. No. 42,887



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Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

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of 10

### Complete if Known

Application Number	10/792,279
Filing Date	March 4, 2004
First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
Art Unit	2675
Examiner Name	Not Yet Assigned

Attorney Docket Number

IMMR063/00

### U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		6,585,595	07-01-2003	Soma	
		6,433,771	08-2002	Yocum et al.	
		6,424,333	07-23-2002	Tremblay	
		6,422,941	7/23/2002	Thorner et al.	
		6,317,032	11-13-2001	Oishi	
		6,275,213	08-14-2001	Tremblay	
		6,211,861	04-03-2001	Rosenberg	
		6,198,206	03-06-2001	Saarmaa	
		6,184,868	02-06-2001	Shahoian	
		6,181,318	01-2001	Lim	
		6,160,489	12/12/2000	Perry et al.	
		6,111,577	8/29/2000	Zilles et al.	
		6,104,158	08-15-2000	Jacobus	
		6,088,019	07-11-2000	Rosenberg	
		6,088,017	07-11-2000	Tremblay	
		6,078,126	06-20-2000	Rollins	
		6,046,726	04-2000	Keyson	
		6,044,646	04-04-2000	Silverbrook	
		6,004,134	12-21-1999	Marcus	
		6,001,014	12-14-1999	Ogata	
		5,986,643	11-16-1999	Harvill	
		5,984,880	11-16-1999	Lander	
		5,973,670	10-26-1999	Barber	
		5,945,772	08-31-1999	Macnak	
		5,914,705	06-22-1999	Johnson	
		5,914,705	06-1999	Johnson et al.	
		5,897,437	04-27-1999	Nishiumi	
		5,894,263	04-13-1999	Shimakawa	
		5,889,672	03-30-1999	Schuler	
		5,857,986	01-12-1999	Moriyasu	
		5,828,363	10-1998	Yaniger et al.	
		5,805,140	09-08-1998	Rosenberg	
		5,790,108	08-04-1998	Salcudean	

Examiner Signature	Date Considered
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for form 1449A/PTC				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				Application Number	10/792,279
(use as many sheets as necessary)				Filing Date	March 4, 2004
				First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
				Art Unit	2675
				Examiner Name	Not Yet Assigned
Sheet	2	of	10	Attorney Docket Number	IMMR063/00

<b>U.S. PATENT DOCUMENTS</b>					
Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5,785,630	07/28/1998	Bobick, et al.	
		5,784,052	07-21-1998	Keyson	
		5,781,172	07-14-1998	Engel	
		5,766,016	06/16/1998	Sinclair et al.	
		5,754,023	05-19-1998	Roston	
		5,742,278	04-21-1998	Chen	
		5,739,811	04-14-1998	Rosenberg	
		5,736,978	04-07-1998	Hasser	
		5,734,373	03-31-1998	Rosenberg	
		5,714,978	02-03-1998	Yamanaka	
		5,709,219	01-20-1998	Chen	
		5,690,582	11/25/1997	Ulrich et al.	
		5,689,285	11-1997	Asher	
		5,684,722	11-04-1997	Thorner	
		5,669,818	09-23-1997	Thorner	
		5,661,446	08-26-1997	Anderson	
		5,643,087	07-01-1997	Marcus	
		5,631,861	05-20-1997	Kramer	
		5,619,180	04-08-1997	Massimino	
		5,589,828	12-31-1996	Armstrong	
		5,589,828	12-1996	Armstrong	
		5,587,937	12-24-1996	Massie	
		5,583,478	12-10-1996	Renzi	
		5,580,251	12-03-1996	Gilkes	
		5,575,761	11/19/1996	Hajianpour	
		5,565,840	10-15-1996	Thorner	
		5,547,382	08/20/1996	Yamasaki et al.	
		5,466,213	11/14/1995	Hogan et al.	
		5,440,183	08-08-1995	Denne	
		5,437,607	8/1/1995	Taylor	
		5,436,622	7/25/1995	Gutman et al.	
		5,405,152	04-11-1995	Katanics	
		5,399,091	03-21-1995	Mitsumoto	

Examiner Signature	Date Considered
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

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*Complete if Known*

Application Number	10/792,279
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First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
Art Unit	2675
Examiner Name	Not Yet Assigned

Attorney Docket Number

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		5,388,992	02-14-1995	Franklin	
		5,354,162	10-11-1994	Burdea	
		5,334,027	08/02/1994	Wherlock	
		5,309,140	05/03/1994	Everett, Jr., et al.	
		5,299,810	04/05/1994	Pierce et al.	
		5,296,871	03-22-1994	Paley	
		5,283,970	2/8/1994	Aigner	
		5,275,174	01/04/1994	Cook	
		5,271,290	12/21/1993	Fischer	
		5,261,291	11-1993	Schoch et al.	
		5,240,417	08/31/1993	Smithson et al.	
		5,227,594	07-1993	Russo	
		5,212,473	05/18/1993	Louis	
		5,203,563	04-20-1993	Loper, III	
		5,186,695	2/16/1993	Mangseth et al.	
		5,186,629	02-16-1993	Rohen	
		5,184,319	02-02-1993	Kramer	
		5,175,459	12/29/1992	Danial et al.	
		5,172,092	12-15-1992	Nguyen et al.	
		5,165,897	11/24/1992	Johnson	
		5,146,566	09-08-1992	Hollis Jr.	
		5,107,262	04-21-1992	Cadoz	
		5,103,404	04-07-1992	McIntosh	
		5,078,152	01/07/1992	Bond et al.	
		5,038,089	08/06/1991	Szakaly	
		5,035,242	07/30/1991	Franklin et al.	
		5,022,407	06/11/1991	Horch et al.	
		5,022,384	6/11/1991	Freels	
		5,019,761	05/28/1991	Kraft	
		4,934,694	06/19/1990	McIntosh	
		4,930,770	06/05/1990	Baker	
		4,891,764	01/02/1990	McIntosh	
		4,885,565	12/5/1989	Embach	

Examiner Signature	Date Considered
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Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

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of

10

		Complete if Known	
		Application Number	10/792,279
		Filing Date	March 4, 2004
		First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
		Art Unit	2675
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		4,885,565	12-05-1989	Embach	
		4,868,549	09-19-1989	Merril	
		4,795,296	01-03-1989	Jau	
		4,794,392	12/27/1988	Selinko	
		4,731,603	03-15-1988	McRae	
		4,713,007	12/15/1987	Alban	
		4,708,656	11/24/1987	de Vries et al.	
		4,706,294	11-10-1987	Ouchida	
		4,599,070	07/08/1986	Hladky et al.	
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		4,484,191	11/20/1984	Vavra	
		4,473,725	09-1984	Kim	
		4,464,117	8/7/1984	Foerst	
		4,459,440	07-1984	Wiczer	
		4,414,984	11-15-1983	Zarudiansky	
		4,382,166	05-1993	Kim	
		4,333,070	6/1/1982	Barnes	
		4,262,549	4/21/1981	Schwellenbach	
		4,236,325	12/02/1980	Hall et al.	
		4,127,752	11/28/1978	Lowthorp	
		4,160,508	07/10/1979	Salisbury, Jr.	
		3,919,691	11-11-1975	Noll	
		3,911,416	10/07/1975	Feder	
		3,903,614	09/09/1975	Diamond et al.	
		3,902,687	09/02/1975	Hightower	
		3,623,064	11/23/1971	Kagan	
		3,517,446	06/30/1970	Corlyon et al.	
		3,497,668	02/24/1970	Hirsch	
		3,220,121	11/30/1965	Cutler	
		3,157,853	11/17/1964	Hirsch	
		2002/0142701	10-2002	Rosenberg	
		2002/0030663	03-14-2002	Tierling	

Examiner Signature	Date Considered
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Substitute for form 1449A/PTO		<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>		Application Number	10/792,279
		Filing Date	March 4, 2004
		First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
		Art Unit	2675
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<p>Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.</p> <p><b>Substitute for form 1449A/PTO</b></p> <p><b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b></p> <p><i>(use as many sheets as necessary)</i></p>			
		<b>Complete if Known</b>	
		Application Number	10/792,279
		Filing Date	March 4, 2004
		First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
		Art Unit	2675
		Examiner Name	Not Yet Assigned
Sheet	6	of	10
		Attorney Docket Number	IMMR063/00

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.	
		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.	
		WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.	
		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.	
Examiner Signature		Date Considered	

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				Art Unit	2675
				Examiner Name	Not Yet Assigned
Sheet	7	of	10	Attorney Docket Number	IMMR063/00

<b>OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS</b>		
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-90-039, August, 1990.
		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, <i>Dynamic Systems and Control</i> : Volume 1, ASME 1994.
		GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.
		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
		OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.
		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
		LAKE, "Cyberman from Logitech," at <a href="http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html">http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html</a> , 1994.
		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).
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<sup>1</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Substitute for form 1449A/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				Application Number	10/792,279
(use as many sheets as necessary)				Filing Date	March 4, 2004
				First Named Inventor	Juan Manuel CRUZ-HERNANDEZ
				Art Unit	2675
				Examiner Name	Not Yet Assigned
Sheet	8	of	10	Attorney Docket Number	IMMR063/00

<b>OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS</b>		
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," <i>Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems</i> , Raleigh, NC, July 7-10, 1992
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		Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992
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		Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990
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		IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990
		Terry et al., "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire</i> , March 10-11, 1988
		Howe, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992
		Eberhardt et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993
		Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987
		Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980
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